

WHAT IS CLAIMED IS:

1. A video decoding and displaying apparatus comprising:
 - a managing unit that partitions a frame memory into a plurality of sectors, wherein the frame memory stores decoded video data of a frame not used as a predicted video, the decoded video data including
5 a top-field data and a bottom-field data;
 - a write control unit that writes the top-field data and the bottom-field data of the decoded video data into separate free sectors of the frame memory; and
 - 10 a read control unit that, at the time of displaying decoded video data by reading it from the frame memory, simultaneously releases, during a last display field period of a display video, the sector that stores the top-field data and the sector that stores the bottom-field data when the sector capacity of the frame memory is equal to or greater than
15 that required for one frame of video data to be displayed.
2. The video decoding and displaying apparatus according to claim 1, wherein
 - the read control unit determines a reading order of lines for
20 reading decoded video data from the frame memory and displaying the data, based on a format suitable for an attribute of the displayed video, a picture size, and type of a display monitor.
3. The video decoding and displaying apparatus according to claim
25 1, wherein

when the decoded video data includes two video data of different picture sizes, and also when the sector capacity of the memory frame is less than that required for one frame of the video data of a larger picture size,

5 the read control unit releases one corresponding sector out of a sector that stores top-field data which has been read and a sector which stores bottom-field data during each display field period, in a reading and a displaying of the video data of the larger picture size, and simultaneously releases the sector that stores top-field data and
10 the sector that stores bottom-field data during a last display field period, in a reading and a displaying of the video data of a smaller picture size.

4. The video decoding and displaying apparatus according to claim 1, wherein

15 the read control unit executes the release upon completing the reading of data corresponding to a number of written lines, when a value obtained by dividing a vertical pixel size of the video data by the number of storage lines of sectors that store the video data of a displayed frame becomes an odd number.

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5. The video decoding and displaying apparatus according to claim 1, wherein

when the decoded video data includes video data of a frame structure and video data of a field structure,

25 the read control unit simultaneously releases the sector that

stores top-field data and the sector that stores bottom-field data during a last display field period, in a reading and a displaying of the video data of the frame structure, and

releases one corresponding sector out of the sector that stores
5 top-field data which has been read and the sector which stores bottom-field data during each display field period, in a reading and a displaying of the video data of the field structure.

6. The video decoding and displaying apparatus according to claim
10 1, wherein

when the decoded video data includes video data that requires a conversion processing of a frame rate,

the read control unit does not execute the release of sectors during each field period that is required for the display of one frame,
15 and simultaneously releases a sector that stores top-field data and a sector that stores bottom-field data during a last display field period of the frame, in a reading and a displaying of the video data.

7. The video decoding and displaying apparatus according to claim
20 1, wherein

the read control unit executes a field freezing when a display operation period during which a pause is input is a display operation period for releasing one of a sector that stores top-field data and a sector that stores bottom-field data, and executes a frame freezing
25 when the display operation period is for simultaneously releasing both

sectors.

8. The video decoding and displaying apparatus according to claim 1, further comprising:

5 an attribute holding unit that holds an attribute of the decoded video data of a frame not used as a predictive video;

a release mode generating unit that receives a setting of a dynamic mapping mode, refers to the attribute held in the attribute holding unit, and generates a sector release signal for assigning one of
10 a one-sector release mode for releasing one sector and a two-sector release mode for releasing two sectors; and

a control unit that controls the release of sectors, following the sector release mode signal.

15 9. The video decoding and displaying apparatus according to claim 1, further comprising:

an attribute holding unit that holds attributes of the decoded video data for two kinds of frames that are used as a predictive video during a normal reproduction;

20 a switching unit that switches over a storage state in the frame memory, based on the attribute in the attribute holding unit, at the time of shifting a reproduction from a normal reproduction to an inverse reproduction;

a release mode generating unit that receives a setting of a
25 dynamic mapping mode, refers to the attribute in the attribute holding,

and generates a sector release signal for assigning one of a one-sector release mode for releasing one sector and a two-sector release mode for releasing two sectors; and

5 a control unit that controls the release of the sectors, following the sector release mode signal.

10. A method of decoding and displaying video, comprising:

partitioning a frame memory into a plurality of sectors, wherein the frame memory is used to store decoded video data of a frame not
10 used as a predicted video, the decoded video data including a top-field data and a bottom-field data;

writing the top-field data and the bottom-field data into separate free sectors of the frame memory; and

15 simultaneously releasing, at the time of displaying the decoded video data by reading it from the frame memory, during a last display field period of a display video, the sector that stores the top-field data and the sector that stores the bottom-field data when the sector capacity of the frame memory is equal to or greater than that required for one frame of video data to be displayed.

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